Agilent B2200A
fA Leakage Switch Mainframe
Agilent B2201A
14ch Low Leakage Switch Mainframe

Data Sheet

Introduction

Basic functions

Agilent B2200A fA leakage switch mainframe and B2201A 14ch low leakage mainframe functions:

- Switches DC current, DC voltage, capacitance and LCR meters
- Set and monitor connection status on front panel
- Configurated status display with LED matrix display
- Connection setup by light pen
- Controls through GP-IB interface
- Auto ground function
- Self-test, relay function test
- Relay cleaning

Agilent B2200A fA leakage switch mainframe

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Configuration

Input (B2200A/B2201A)

- IV port: 8 triaxial ports (or 4 Kelvin triaxial ports) with low leakage performance
- AUX port: 6 BNC ports including dedicated 2 CV ports
- All input ports can use concurrently

Output (B2210A/B2211A)

- 12 triaxial ports per switch module. Frame can have 4 modules maximum. (Total 48 ports)

Software

The B2200A and B2201A include a CD-ROM with VXI *Plug&Play* driver which contains capacitance compensation routine.

General specifications

Temperature range	Operation:	+5° C to 35° C
	Storage:	–20° C to 70° C
Humidity range	Operation:	+5% to 70% R.H. no condensation
	Storage:	(B2200A, B2210A) < 80% @35° C, < 60% @ 65° C no condensation (B2201A, B2211A) < 80% @ 65° C no condensation
Altitude	Operation:	0 m to 2,000 m
	Storage:	0 m to 15,240 m
Regulatory Compliance	Safety:	CSA C22.2 No.1010.1/IEC 1010-1
	EMC:	CISPR 11 Group 1 class A&EN50082-1
Power requirement	90 to 264 V (continuous), 47 to 63 Hz, 2 A/200 VA max	
Number of slots	4 slots for 48 mm height switch module.	
Size	B2200A/B2201A	430 mm W x 320 mm H x 600 mm D
	B2210A/B2211A	395 mm W x 48 mm H x 500 mm D
Weight (approx.)	B2200A/B2201A	14.0 kg
	B2210A	4.5 kg
	B2211A	3.5 kg
Number of ports (B2210A, B2211A use with B2200A, B2201A)		
	I-V port:	8 triaxial ports (with guard)
	AUX port:	6 BNC ports (2 of CV port)
	Output channel:	12 triaxial ports (with guard), max. 48 ports

Switch module specifications (Used with mainframe*1)

Condition		B2210A	B2211A
Max current rating (A):	I-V port	1.0	1.0
	AUX port	0.5	0.5
Max voltage rating (V):	I-V: (to common)	200	200
	I-V: (to other ch.)	300	300
	AUX: (to common)	100	100
	AUX: (to other ch.)	100	100
Close channel residual resistance (Ω):	I-V port	0.6	0.6
	AUX port	1.5	1.5
Channel isolation resistance (Ω):	I-V port	$1x10^{14}$	$5x10^{13}$
	AUX port	$1x10^{9}$	$1x10^{9}$

Condition: 23° C ± 5° C, 5% to 60% R.H.

1. *B2200A only supports B2210A fA leakage switch module. B2201A only supports B2211 14ch low leakage switch module. Mixed configuration is not supported.*

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Supplemental characteristics (B2200A/B2210A)*1

Offset current	10 fA*2	I-V port
IM noise (RMS)	0.6 fA*3	I-V port
Channel crosstalk capacitance	< 1 pF/ch	I-V port
	< 3 pF/ch	AUX port
Offset voltage	< 50 µV	I-V port
	< 80 µV	AUX port
Settling time*4	2.0 sec at 50 fA	
Band width (at –3 dB)	30 MHz	AUX port
Guard capacitance	< 145 pF*5	I-V port
Additional C measurement error	< ± 1 % + 0.2 pF*6	AUX port

Supplemental characteristics (B2201A/B2211A)*1

Offset current	100 fA*7	I-V port
IM Noise (RMS)	5 fA*3	I-V port
Channel crosstalk capacitance	< 0.5 pF/ch	I-V port
	< 3 pF/ch	AUX port
Offset voltage	< 80 µV	I-V port
	< 100 µV	AUX port
Settling time*4	2.0 sec at 300 fA	
Band width (at –3 dB)	30 MHz	AUX port
Guard capacitance	< 145 pF*5	I-V port
Additional C measurement error	< ± 1 % + 0.2 pF*6	AUX port

**1. B2200A only supports B2210A fA leakage switch module.*
B2201A only supports B2211 14ch low leakage switch module.
Mixed configuration is not supported.

**2. The offset current when zero volts is applied to all input and output channels.*
This measurement is made on a port, 5 seconds after a switching a relay.

**3. Measured 100 PLC by 4156C when zero volts are applied to all other paths.*

**4. After 10 V applied.*

**5. The guard capacitance of the closed port on input and output ports when 4 modules per frame are installed.*

**6. The additional error using the C-compensation algorithm for Agilent 4284 at 1 kHz to 1 MHz, <1000 pF and 3 m cable.*

**7. The offset current when zero volts is applied to all input and out channels.*
This measurement is made on a port, 60 seconds after a switching a relay."

Agilent B2200A fA leakage switch mainframe (back panel)

Specification condition

Specification and supplemental characteristics are defined at 23° C ± 5° C < 60% relative humidity (R.H.)

The supplemental characteristics entries in the following specification are not warranted but they provided useful information about the functions and performances of the instruments.

Accessories & cables

Agilent 16443A	Light pen for B2200A/ B2201A
Agilent 16494A	Triaxial cable
Agilent 16493K	Kelvin triaxial cable (for input port) (Between 4155/56 series or E5270 series and B2200/2201A input port)
Agilent 16494B	Kelvin triaxial cable (for output port)
Agilent 16494F	CMU input cable
Agilent 16493N	GND cable (Between GND of E5270/41501 and B2201A/B2200A)

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